



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,154	03/24/2005	Yoshihisa Umeno	10873.1582USWO	1870
52835 7590 10/16/2007 HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902 MINNEAPOLIS, MN 55402-0902			EXAMINER CORRIGAN, JOSEPH JAMES	
			ART UNIT 3744	PAPER NUMBER
			MAIL DATE 10/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,154	Applicant(s) UMENO, YOSHIHISA	
	Examiner Joseph Corrigan	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/17/05</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claims 1-10 are objected to because of the following informalities.
 - The recitation of "a chamber" (claim1, line 2) is presumed to be "a cooling chamber" for consistency throughout the specification and the claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

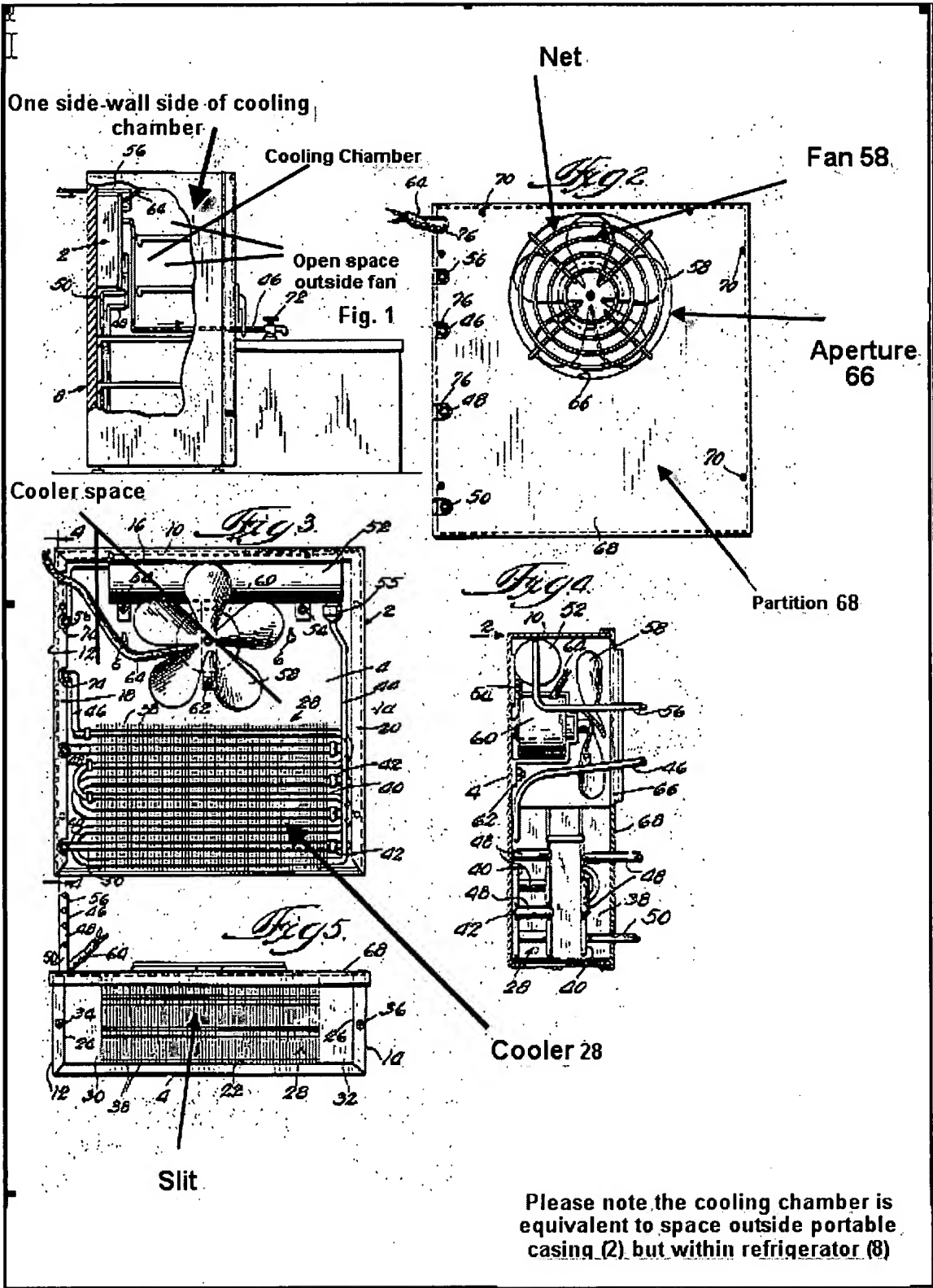
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1-3, 6, 8,10 rejected under 35 U.S.C. 102(b) as anticipated by J. H. Lazar '2,747,381'.

In re claim 1, J. H. Lazar discloses the claimed invention:

- A cooler (28) provided on at least one side-wall side (8A) of a chamber (see marked-up figure 1) formed with a thermally insulated box.
- A cooling chamber (see marked-up figure 1) in front of the cooler (28).

- A fan (58) that allows air in the cooling chamber (see marked-up figure 1) to flow.
(see figure 4)
- Wherein the cooler (28) and the cooling chamber (see marked-up fire 1) are partitioned by a partition (68) so as to allow cold air to be accumulated in the cooler (28).
- The fan (58) is disposed on a side of a cooler (28) relative to the partition (68).
(see figure 4)
- The partition (68) in front of the fan (58) has an aperture (66) formed in the flat sheet portion. (see figures 1 & 4)
- An open space (see marked-up figure 1) is formed between the fan (58) and the flat sheet portion (partition and bottom portion of cooler casing) in which the aperture (66) is formed (see figs. 2 and 4).
- Cold air accumulated in a space inside the partition (68) and hot air in the cooling chamber (see marked-up figure 1) are exchanged by the fan (58) through the aperture (66). Since applicant does not specifically define in claim language airflow in terms of an implied or explicit restriction to contribution from the evaporator section, an "elevator" type circular flow meets the claim limitation. In other words, since "hot air" originating in cooling chamber gets drawn up through the bottom opening (slot) in cooler casing and out through the aperture, ultimately blending the hot and cold air. Broadly speaking one can surmise by using the applicants phrasing "exchanging by the fan through the aperture" being the most dynamic segment of the mixing cycle.



In re to claim 2, J. H. Lazar discloses in fig. 2 that dimensions of the aperture (66) are larger than a diameter of the fan (58).

In re to claim 3, J. H. Lazar discloses in fig. 4 that when viewing the fan (58) in a direction of a rotation shaft of the fan (58), the fan (58) is disposed in the aperture (66) and there is an open space (see marked up figure 1) outside the fan (58).

In re to claim 6, J. H. Lazar discloses in fig. 3, the fan (58) is disposed above the cooler (28).

In re claim 8, J. H. Lazar discloses that a slit is formed in the partition (68) at a portion opposed to the cooler (28) or a portion below the cooler (28). Broadly recited, a "slit" (see marked-up drawing 5) is an opening, and thus, Lazar teaches a slit.

In re to claim 10, J. H. Lazar discloses that a safety cover (see marked-up drawing 2) is disposed over the aperture (66) using a net (see marked up figure 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

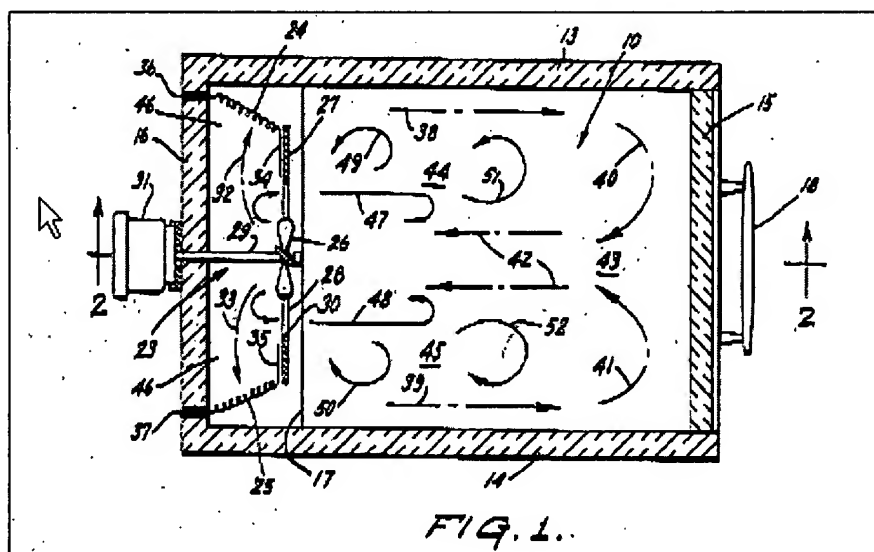
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4, 5, 7 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. H. Lazar '2,747,381' in view of Scofield "2,957,067".

In re claim 4, J. H. Lazar discloses the claimed invention as described above, however, J. H. Lazar does not explicitly teach that the rotation of the fan generates a

Art Unit: 3744

discharge flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of air sucked from the cooling chamber to the cooler through the aperture.



Scofield Patent # 2,957,067

Scofield teaches (fig.1 above) and in column 4, lines 13-27 "[using an oversized fan aperture 28] "..... In normal operation the air of said streams is reasonably hot [cold], although such air may be slightly cooler [warmer] than the air of forward currents 38,39, the thermal gradient being due to inherent and unavoidable radiation of heat (cold) from the extended surfaces of flat oven (10) [refrigerator]. It will thus be seen that returning or short-circuiting airflows (47,48) contribute substantially to the desired affect of additional heating [cooling] to areas 44,45 into which they circulate.

In addition, the introduction of such return currents 47, 48 causes added heating [cooling] of said areas 44, 45 and consequently, satisfactory heat (cold) equalization between all oven [refrigerated] areas, by the inherent creation of eddies 49, 50, 51, 52

Art Unit: 3744

along the boundaries of counter current air flows 47, 38 and 48, 39. Such eddies deflect heated [cooled] air, of maximum [minimum] temperature, from the currents 38, 39 which flow alongside walls 13, 14, and the deflected hot [cold] air is then diffused by such eddies in areas 44, 45. Thus the jet-like and compact form of said hot [cold] air currents 38, 39 is largely destroyed and there is created, in effect, the equivalence of an air guiding and distributing structure, in the area receiving heated [cooled] air, equivalence being provided by the mere employment of oversize fan aperture 28, in the area wherefrom air is supplied by the heaters [cooler]."

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lazar with teaching of "oversized fan aperture" structure to generate airflow dynamics in cooling chamber. ***This airflow signature in its purest form approaches an ideal three-dimensional heat gradient for cooking or cooling {value(ideal) = zero}, not unlike how multi colored ingredients in a blender become one. Temperature gradient turbulence dynamics, irrespective of its place in the heat spectrum correlates one to one up and down the heat scale, thereby satisfying airflow requirement presented by applicant.*** It would be advantageous to create eddy currents in that it stalls to to the extent that the colder air is distributed more uniformly keeping all products be cooled at the same low temperature.

In re claim 5, D. W. Scofield (see fig. 1) teaches that using an oversized fan aperture one can create eddy currents, to in effect, "... deflect heated air ... ", as stated in column 4, line 18, which is analogous to suppressing flow speed of cool air in a cooling system.

In re to claim 7 & 9, D. W. Scofield teaches that a fan application with an area of the aperture S and a diameter of the fan R, the following relationship

$$1.5 \times \pi (R/2)^2 \leq S \leq 2 \times \pi (R/2)^2$$

can be satisfied by modifying J. H. Lazar to reflect this design criteria. As stated in column 3 lines 8-10, "It may briefly be said that the fan desirably covers, when rotating, only about 65% of the area of the aperture." In terms of applicants above proportionality equation it is equivalent to 1.54 within optimum range of the 1.5 to 2.0 target. Also, regarding "... plurality of combinations of fan and aperture" restriction in claim 7 it is assumed that applicant is broadening claim by including the many possibilities of aperture/fan combinations falling within the range of above stated proportionality equation. Since Scofield's optimum design tolerance falls within said range it can be determined that increasing proportions to the "high side" of the equation will extrapolate well into applicant's proportionality curve.

Response to Arguments

6. Applicant's arguments filed 8/6/07 have been fully considered but they are not persuasive. In the following discussion examiner will address all points argued by applicant:

- Applicant argues that Lazar '381 fails to meet limitation "... a cooler provided on at least one side-wall side of chamber formed with a thermal insulating box..." In column 1, lines 67-68 Lazar '381 states "... conveniently hang the casing [of cooler] within a refrigerator (8) as shown in Fig. 1." Since Lazar

clearly defines apparatus as “refrigerator,” insulation is an inherent feature as would be known by one of ordinary skill in the art. Regarding “a chamber” in line 2 of claim 1, as best understood (see objection) Lazar ‘381 meets positioning limitation requiring “a cooler provided on at least one side-wall side of **a chamber**....” as shown in figure 1.

- Applicant argues that “cold air accumulated in a space inside the partition and hot air in the cooling chamber are exchanged by the fan through the aperture” limitation is not met by Lazar ‘381. Argument is not persuasive because Lazar apparatus as taught by Scofield modification cycles “cold air” and “hot air” through slit, up through the cooler, then through opening space outside fan and finally back into cooling chamber. In broad terms, the air is mixed “through the aperture” as well as through the cooler, stalling motion of mixed air that leaves the aperture by eddy currents as taught by Scofield
- The applicant argues that the Scofield reference is not applicable because it is an oven with important structural differences; however, teaching from Scofield focuses on aperture/fan proportion and it’s responsibility for “back and forth” air mixing ability.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **US 2,747,381** discloses a cooling system with many of the same features of the claimed apparatus. **US 2,957,067** discloses an appliance with identical air flow characteristics as claimed apparatus. **US 3,365,118** discloses a cooling device

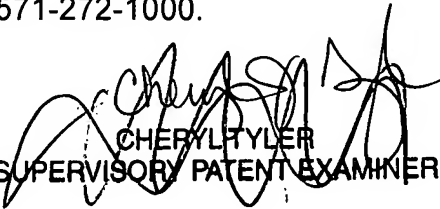
which has practically all the same features as the applicant's invention except the fan aperture opening shape. **US 7,118,333** discloses a cooling device for electronics with an oversized fan aperture opening similar to claimed apparatus. **US 3,359,751** discloses a refrigerator having a cooling fan with applied grill across partition opening as specified in applicant's invention. **US 5,819,552** discloses a refrigeration system with unique airflow features similar to claimed invention. **US 2,993,349** discloses a refrigeration display case with a multiple fan cooling system with similar airflow characteristics as claimed invention. **US 5,157,935** discloses a hot gas defrost system that attempts to suppress frost on cooling coils without the use of a heater as does claimed invention with unique airflow abilities. **US 3,379,029** discloses a cooling system similar to many features in claimed invention. **US 6,579,063** discloses a cooling system featuring a fan covered with shroud attempting to accomplish many qualities of claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph J. Corrigan whose telephone number is 571-270-3213. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, are Cheryl Tyler or Frantz Jules on (571) 272-4834 or (571) 272-6681, respectively. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph J Corrigan
Examiner
Art Unit 3744
10/02/07


CHERYL TYLER
SUPERVISORY PATENT EXAMINER